

# PATENT COOPERATION TREATY

REC'D 29 SEP 2005

From the  
INTERNATIONAL SEARCHING AUTHORITY

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## PCT

To:

see form PCT/ISA/220

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/IB2005/050215

International filing date (day/month/year)  
19.01.2005

Priority date (day/month/year)  
23.01.2004

International Patent Classification (IPC) or both national classification and IPC  
H01J61/44, C09K11/78, C09K11/64

Applicant  
KONINKLIJKE PHILIPS ELECTRONICS N.V.

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/B2005/050215

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**Box No. I Basis of the opinion**

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1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/050215

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-6
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

**2. Citations and explanations**

see separate sheet

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**Re Item V.**

**1 Reference is made to the following documents:**

- D1: US-B1-6 380 669 (ZACHAU MARTIN ET AL) 30 April 2002 (2002-04-30)
- D2: EP-A-0 993 022 (MATSUSHITA ELECTRONICS CORPORATION;  
MATSUSHITA ELECTRIC INDUSTRIAL CO.) 12 April 2000 (2000-04-12)
- D3: US-A-6 144 152 (VAN DER VOORT ET AL) 7 November 2000 (2000-11-07)
- D4: EP-A-0 896 361 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD) 10  
February 1999 (1999-02-10)
- D5: PATENT ABSTRACTS OF JAPAN vol. 2002, no. 06, 4 June 2002 (2002-06-04)  
& JP 2002 038147 A (TOSHIBA CORP), 6 February 2002 (2002-02-06)
- D6: WO 98/08916 A (PHILIPS ELECTRONICS N.V; PHILIPS NORDEN AB) 5  
March 1998 (1998-03-05)

**2 INDEPENDENT CLAIM 1**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D3 is regarded as being the closest prior art to the subject-matter of claim 1 as it discloses all the features of claim 1 except for the phosphor blend. D3 indeed discloses, a low-pressure mercury discharge lamp (Col.2, l.8-13) comprising a phosphor material emitting in the yellow-green range (claim 2) and a phosphor material emitting in the blue-green range (claim 9).

The subject-matter of claim 1 therefore differs from D3 in that the phosphor layer of the present application consists exclusively in a blend of 2 phosphor materials.

The technical effect resulting from this difference, is that the lamp of the present application emits a light in the green wavelengths region.

The remaining problem to be solved can be regarded as the provision of low-pressure mercury discharge lamp emitting a green light.

With this respect, document D1 discloses a green signaling lamp (col. 3, l. 7), wherein the green light is obtained by the combination of 2 phosphors (claims 1 and 5).

In addition, document D4 discloses a phosphor layer comprising a yellow-green phosphor ((Ce, Gd)MgB<sub>5</sub>O<sub>10</sub>:Tb): paragraph [0118]) combined with a blue-green phosphor (BaMgAl<sub>10</sub>O<sub>17</sub>:Eu, Mn: paragraph [0121]) to achieve a green radiation (paragraph [0120]).

For the sake of completeness, document D2 discloses a fluorescent lamp comprising a water-dispersable blend (paragraph [0045]) of a yellow-green and a blue green phosphors (paragraph [0010])

The skilled person, confronted with the above mentioned technical problem, would therefore consider as obvious to use the phosphor blend described for example in D4 in the low-pressure discharge mercury lamp known from D3, thereby arriving at the lamp of claim 1 of the present invention.

### **3 INDEPENDENT CLAIM 5**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 5 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D2 is regarded as being the closest prior art to the subject-matter of claim 5, and discloses a process with all the features from the process of claim 5 (paragraphs [0044]-[0047]), except for the phosphor blend used, which comprises in D2, 2 supplementary phosphors in addition to the yellow-green and the blue-green phosphors.

As there is no technical effect related to this difference on the process itself, the remaining problem to be solved can be regarded as the provision of an alternative process for the preparation of a lamp.

Methods for the preparation of low-pressure discharge lamps are well-known in the art (see document D2 (paragraphs [0044]-[0047]; documents D5 and D6).

Thus, the skilled person, confronted with the above mentioned technical problem, starting from D2, would easily find a process for the preparation of a low-pressure discharge lamp having a green emission, without the exercise of inventive skill.

**4 DEPENDENT CLAIMS 2-4**

The lack of clarity mentioned in Re item VIII notwithstanding, the subject-matter of claim 2 does not involve an inventive step in sense of Article 33(3) PCT.

Dependent claims 2-4 do not indeed contain any features which, in combination with the features of claim 1, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

In this respect, gadolinium magnesium borate phosphors activated by Ce, Tb and barium magnesium aluminate phosphors activated by Eu, Mn are well known in the art, as well as there combination to obtain a green emission (D3, table 1 and claims 2, 5, 9; D4, paragraphs [0120], [0121] and claims 6, 8).

Moreover, the skilled person would chose, in accordance with circumstances, the good ratio of yellow-green and blue-green phosphors without the exercise of inventive skill.

**5 DEPENDENT CLAIM 6**

Dependent claim 6 does not contain any features which, in combination with the features of any claim 5, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

**Re item VIII.**

**1. Claim 2**

Claim 2 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of result to be achieved, namely a desired light output and operation life of the phosphor, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.